"EAU" is water in French

dat *EAU* base: A powerful large capacity database for raw and validated water quality data with emphasis on their metadata

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- Introduction
- Types of data
- Challenges
- datEAUbase scheme
- datEAUbase design
- Examples of data
- Conclusions

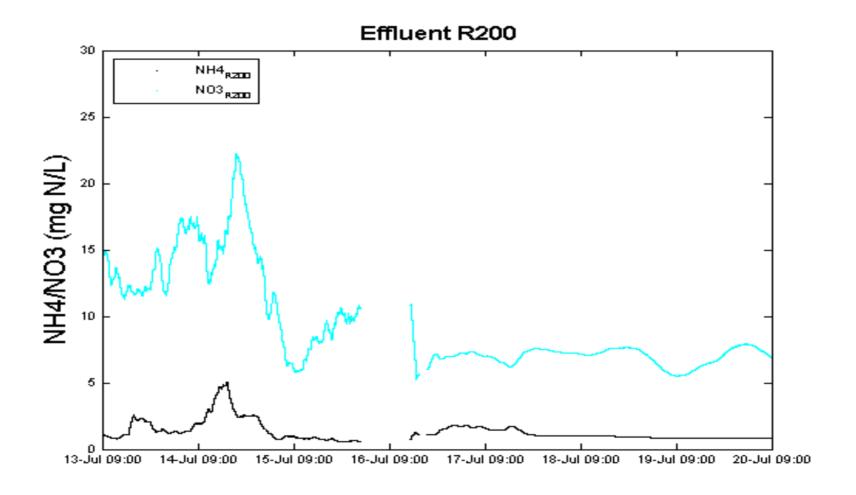
Automated monitoring stations + Sampling/lab



Automated monitoring stations

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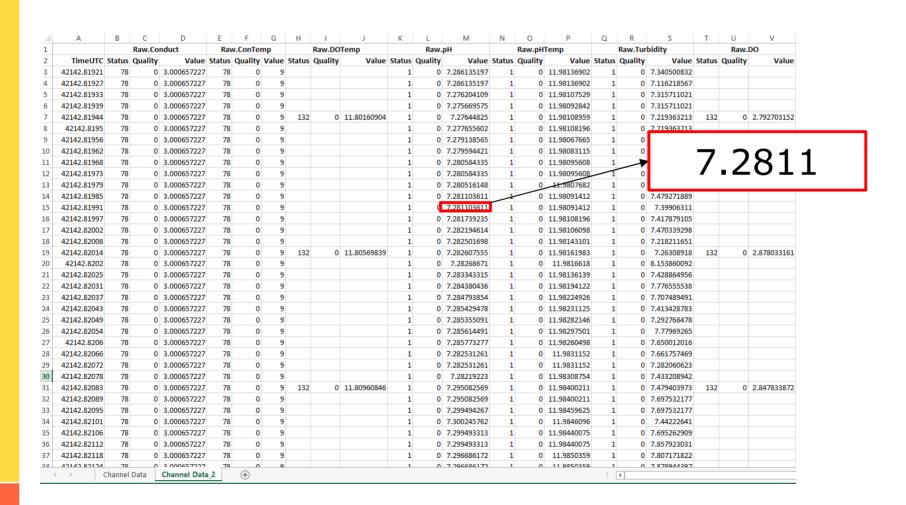
Raw and filtered data



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Importance of the metadata (data about data)

What does this single value mean?



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Importance of the metadata

What does this single value mean?

What has been measured?

When has the value been measured?

Where has the value been measured?

7.2811

Why has the value been measured?

Who has collected the value?

How has the value been measured?

Importance of the metadata

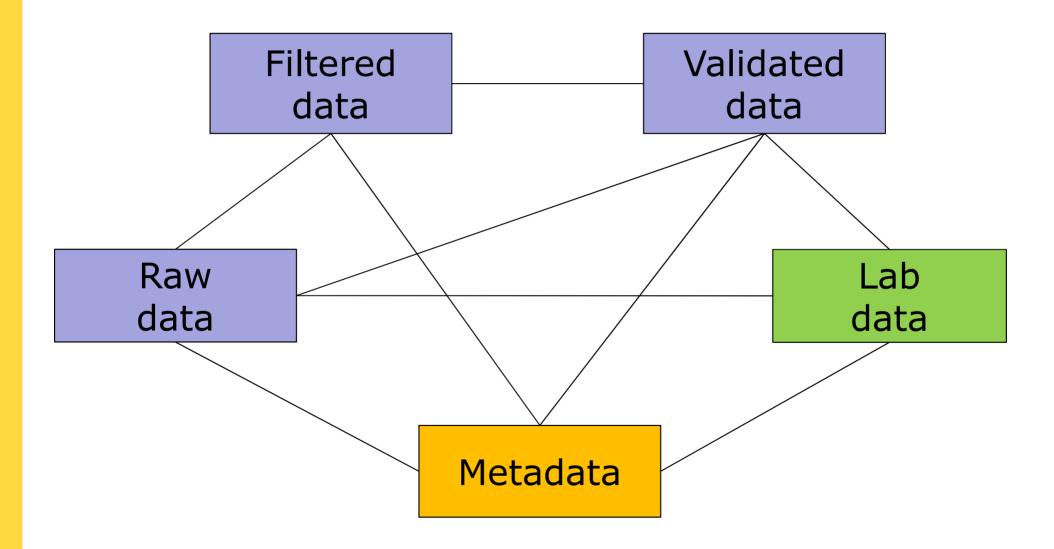
- Collected data are only useful when:
 - They are well-documented
 - Their quality is assured



- Data storage task
- Data validation task

- Introduction
- Types of data
- Challenges
- datEAUbase scheme
- dat*EAU*base design
- Examples of data
- Conclusions

Types of data

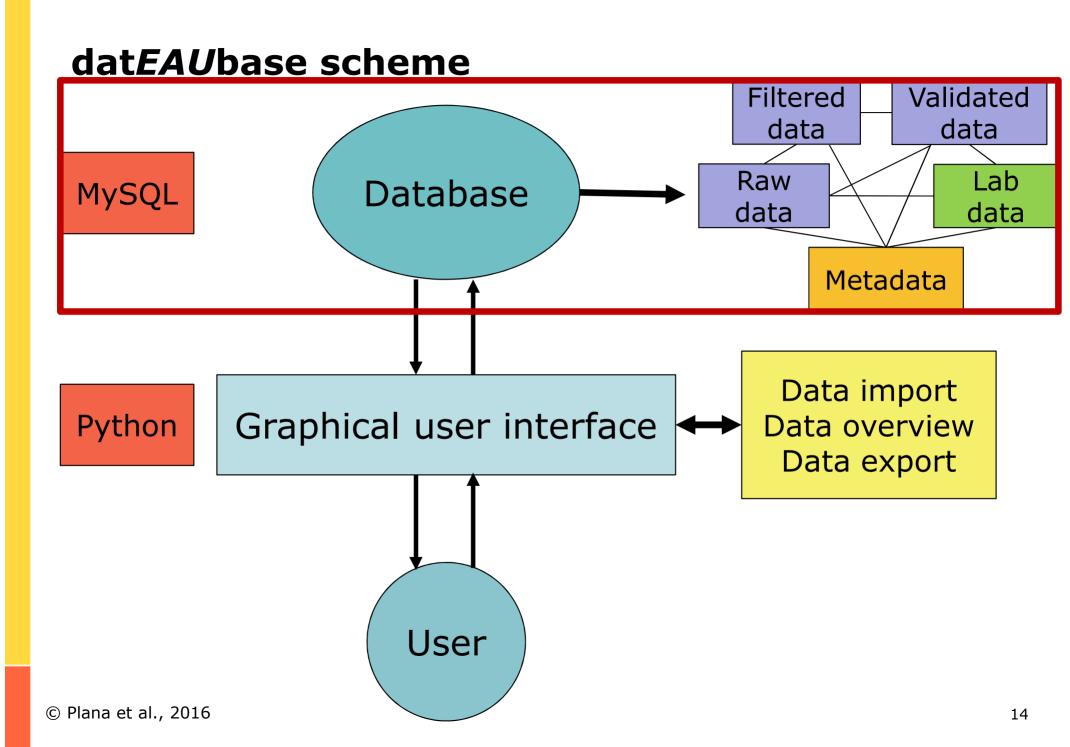


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Data management challenges

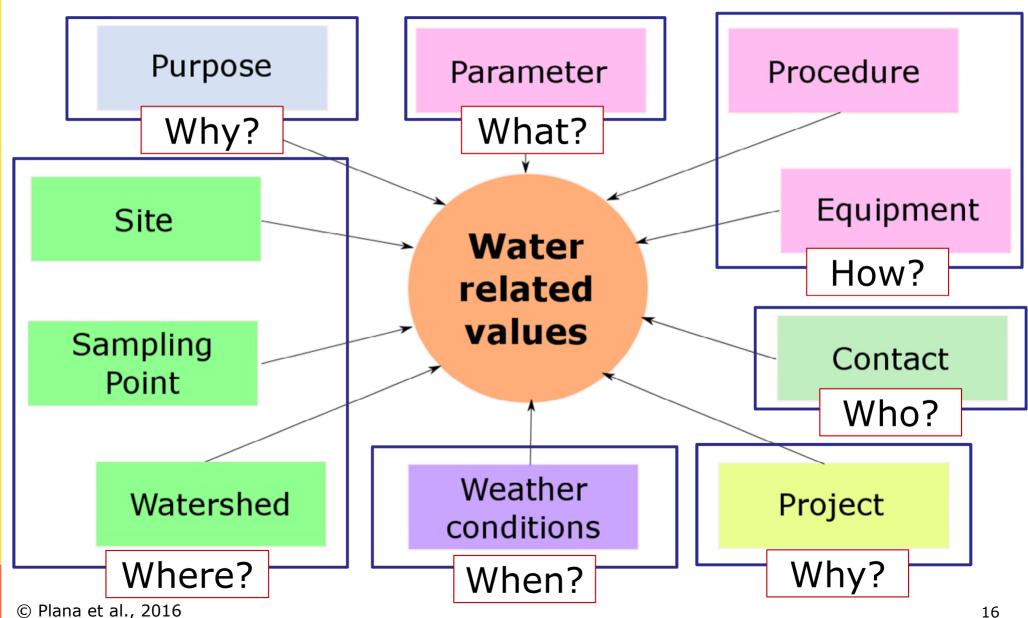
- Variability of raw data formats
- Databases grow continuously and monitoring programs change
 - → Database must be adapted
- Need for high-performance storage and data access
- Personnel that is collecting and managing data is changing over time
 - → Inconsistencies

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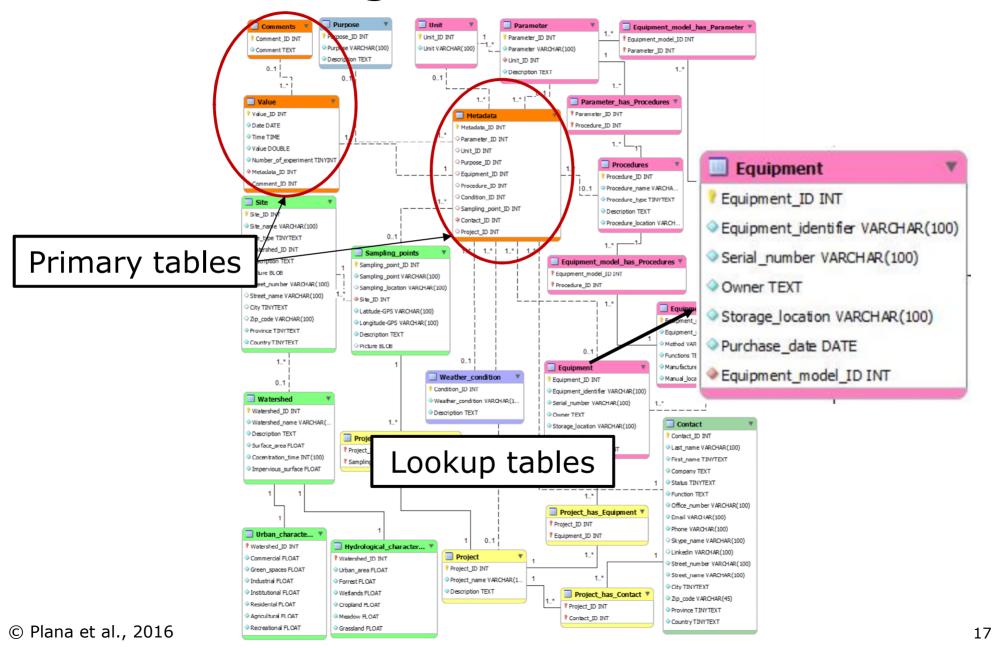


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- · datEAUbase design
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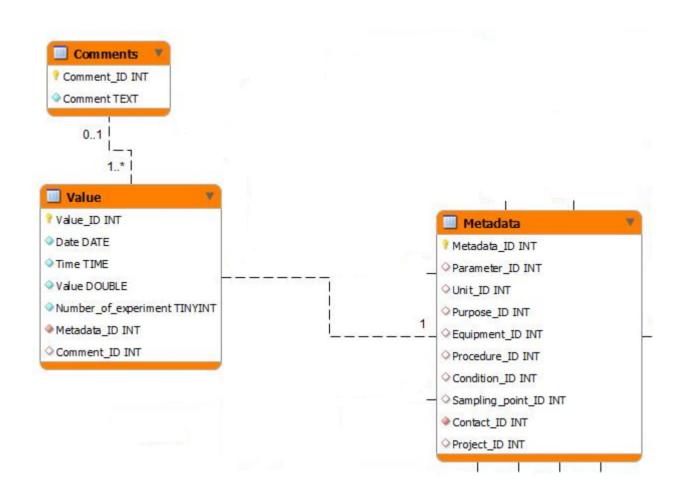
dat EAU base design



dat EAU base design



dat*EAU*base design – Primary tables



dat*EAU*base design – Primary tables

• **Date:** May 29, 2015

• Time: 15:36:02 GMT

• Value: 7.32

• Parameter: pH

• Units: [-]

• **Sensor:** pH_003

Conditions: dry weather

• Purpose: calibration

• Procedure: ISO-15839

• **Site:** Grandes-Piles F/AL

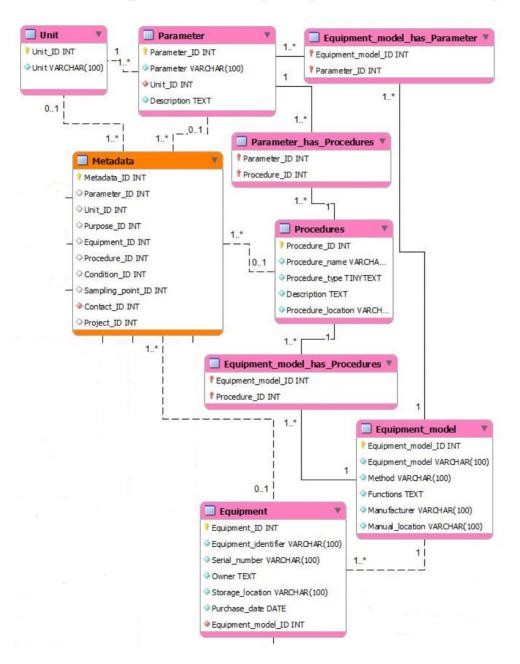
Sampling point: inlet

Responsible: Plana

Project: monEAU

Comment: Unsuccessful calibration

dat*EAU*base design – Equipment & procedures



datEAUbase design - Equipment & procedures

• Parameter: pH

• Units: [-]

• **Sensor:** pH_003

• Brand: Hach

• Model: DPD1P1

Serial number: 2659777

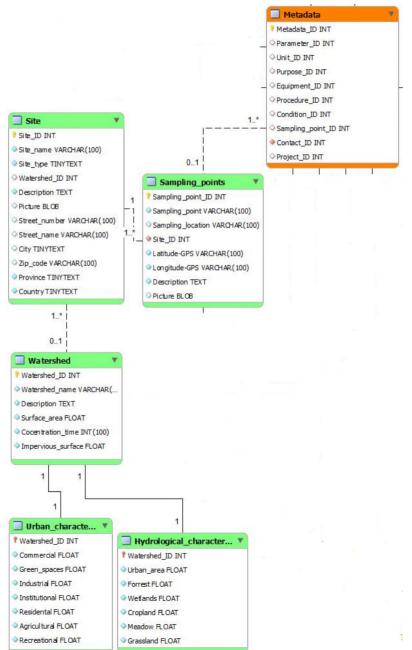
 Principle: Differential of electrical potential Current location: Grandes-Piles F/AL

 Manual: pHD sc Digital Differential Sensor. User manual

 Manual location: http://modelEAU...



dat*EAU*base design – Sampling points



dat*EAU*base design – Sampling points

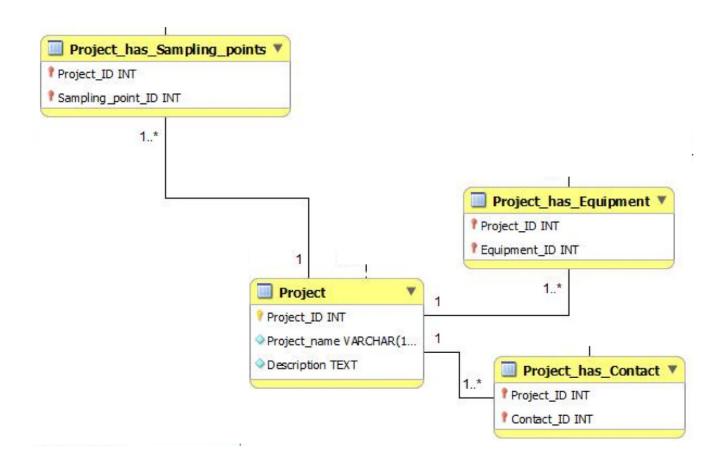
- Site: Grandes-Piles F/AL
- Sampling point: Inlet
- Address: 267-303 5e Av., Grandes-Piles, G0X 1H0, QC, Canada
- Coordinates: 46°41′04″N 72°42′59″W
- Watershed: Saint-Maurice river
- Surface area: 43 300 km²
- Concentration time: 2 days
- Impervious surface: 4 %

Urban characteristics:

- 54.25 % of green spaces
- 2.25 % of industrial area
- 13.5 % of residential area
- 22 % of agricultural area
- 8 % of recreational area



dat*EAU*base design - Projects



dat*EAU*base design - Projects

- Project name: monEAU
- Description: AMS to study the water quality
- Sampling point: inlet in Grandes-Piles F/AL
- Equipment:
 - conductivity_001
 - pH_003
 - ammolyser_001
- Personnel involved:
 - Alferes
 - Plana
 - Vanrolleghem

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dat*EAU*base design – Other lookup tables

Contact information:

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• Last name: Plana

Company: Université Laval

• Status: PhD student

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• **Phone:** +1 418 656 2131, ext. 8730

dat*EAU*base design - Other lookup tables

Weather conditions:

Condition: wet day

• Description: rainfall of more than 3 mm/d

Purpose:

Purpose: sensor validation

 Description: routine sensor validation activity for verification of proper operation

- Introduction
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- Challenges
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- dat*EAU*base design
- Examples of data
- Conclusions

Example

Understandable value

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May 29, 2 Dry weat



2

5

Outlet of F/AL Grandes-Piles F/AL

7.2811

On-line measurement for water quality modelling

Plana

pH_002 sensor

- Introduction
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Conclusions

- datEAUbase is a powerful tool to store data using a single consistent format, giving quality to the content
- Any environmental parameter can be stored into it
- It offers flexibility and it can be modified and adapted for future studies
- Its design is explicitly providing relevant metadata information to the measured values
 - The metadata is fundamental to understand the measured values for use in further studies
- It combines raw, filtered, validated, lab and metadata

Acknowledgments









Questions

